



## DEPARTMENT OF ENERGY

### 10 CFR Part 430

[EERE-2014-BT-STD-0005]

RIN 1904-AD15

### Energy Conservation Program: Energy Conservation Standards for Consumer Conventional Cooking Products

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notification of data availability and request for comment.

**SUMMARY:** On February 1, 2023, the U.S. Department of Energy (“DOE”) published a supplemental notice of proposed rulemaking (“SNOPR”), in which DOE proposed new and amended energy conservation standards for consumer conventional cooking products. In this notification of data availability (“NODA”), DOE is updating its analysis for consumer conventional cooking products based on stakeholder data and information it received in response to that SNOPR. DOE requests comments, data, and information regarding the updated analysis.

**DATES:** DOE will accept comments, data, and information regarding this NODA on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

#### ADDRESSES:

Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at [www.regulations.gov](https://www.regulations.gov), under docket number EERE–2014–BT–STD–0005. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE–2014–BT–STD–0005, by any of the following methods:

*Email: ConventionalCookingProducts2014STD0005@ee.doe.gov.* Include the docket number EERE-2014-BT-STD-0005 in the subject line of the message.

*Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1445. If possible, please submit all items on a compact disc (“CD”), in which case it is not necessary to include printed copies.

*Hand Delivery/Courier:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimiles (“faxes”) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document.

*Docket:* The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at [www.regulations.gov](http://www.regulations.gov). All documents in the docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at [www.regulations.gov/docket/EERE-2014-BT-STD-0005](http://www.regulations.gov/docket/EERE-2014-BT-STD-0005). The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section III of this document for information on how to submit comments through [www.regulations.gov](http://www.regulations.gov).

## **FOR FURTHER INFORMATION CONTACT:**

Dr. Carl Shapiro, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-5649. Email: *ApplianceStandardsQuestions@ee.doe.gov*.

Mr. Pete Cochran, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-9496. Email: *Peter.Cochran@hq.doe.gov*.

For further information on how to submit a comment or review other public comments and the docket, contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by email: *ApplianceStandardsQuestions@ee.doe.gov*.

## **SUPPLEMENTARY INFORMATION:**

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## I. Background

The Energy Policy and Conservation Act, as amended (“EPCA”),<sup>1</sup> authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B<sup>2</sup> of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles. These products include consumer conventional cooking products, the subject of this rulemaking. (42 U.S.C. 6292(a)(10))

The currently applicable energy conservation standards for consumer conventional cooking products consist of a prescriptive prohibition on constant burning pilots for all gas cooking products (*i.e.*, gas cooking products both with or without an electrical supply cord) manufactured on and after April 9, 2012. These standards are set forth at title 10 of the Code of Federal Regulations (“CFR”) § 430.32(j)(1) and (2).

Consumer conventional cooking products comprise conventional cooking tops and conventional ovens, as defined as 10 CFR 430.2. Representations of energy use or energy efficiency of conventional cooking tops made on or after February 20, 2023, must be based on results generated using the test procedure for conventional cooking products at 10 CFR part 430, subpart B, appendix I1 (“appendix I1”). There are currently no DOE test procedures for conventional ovens.

On February 1, 2023, DOE published a supplemental notice of proposed rulemaking (“February 2023 SNOPR”) proposing to establish new and amended standards for consumer conventional cooking products, consisting of maximum integrated annual energy consumption (“IAEC”) levels, in kilowatt-hours per year (“kWh/year”) for electric cooking tops and thousand British thermal units per year

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<sup>1</sup> All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020. Public Law 116-260 (Dec. 27, 2020), which reflect the last statutory amendments that impact Parts A and A-1 of EPCA.

<sup>2</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

(“kBtu/year”) for gas cooking tops. 88 FR 6818. Compliance with the new and amended standards would be required 3 years after the publication date of final rule, should DOE finalize the proposed standards. *Id.* The technical support document (“TSD”) that presented the methodology and results of the February 2023 SNOPR analysis is available at: [www.regulations.gov/document/EERE-2014-BT-STD-0005-0090](http://www.regulations.gov/document/EERE-2014-BT-STD-0005-0090).

On February 28, 2023, DOE published a notification of data availability (“February 2023 NODA”) providing additional information to clarify the February 2023 SNOPR analysis for gas cooking tops. 88 FR 12603. DOE provided further data on the gas cooking top test sample used for the February 2023 SNOPR analysis and estimated that currently available gas cooking tops representing nearly half of the market would already meet the standards that were proposed in the February 2023 SNOPR, and therefore would not be impacted by the proposed standard, if finalized. 88 FR 12603, 12605.

In response to the February 2023 SNOPR, DOE received additional data and information regarding consumer conventional cooking products. Specifically, DOE received additional gas and electric cooking top test data from the Association of Home Appliance Manufacturers (“AHAM”) and Pacific Gas and Electric (“PG&E”).<sup>3</sup> Stakeholders also provided substantive information regarding gas cooking top features that are desired by consumers. In addition, AHAM provided shipment estimates of gas and electric cooking tops by product type and/or configuration. (AHAM, No. 2285 at pp. 6, 27)

Upon consideration of further information received from interested parties in response to the February 2023 SNOPR, this NODA presents updated efficiency levels,

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<sup>3</sup> The AHAM comment containing its data set is available at [www.regulations.gov/comment/EERE-2014-BT-STD-0005-2285](http://www.regulations.gov/comment/EERE-2014-BT-STD-0005-2285). The PG&E data was provided confidentially to DOE’s contractor.

manufacturer production costs, no-new-standards-case market shares, life-cycle costs (“LCC”), payback periods (“PBP”), and national impact analysis (“NIA”) results for all consumer conventional cooking products. DOE is requesting comments, data, and information regarding the updated analysis.

DOE notes that it is continuing to consider all of the stakeholder comments received in response to the February 2023 SNOPR and the February 2023 NODA in further development of the rulemaking.

## **II. Discussion**

In the following sections, DOE details its updated analysis for consumer conventional cooking products. As discussed in the February 2023 SNOPR, DOE has not identified any higher efficiency levels for electric open (coil) element cooking tops and as such, is not including them in this NODA.

### *A. Efficiency Levels*

#### **1. Electric Cooking Tops**

In the February 2023 SNOPR, DOE established efficiency levels for electric smooth element cooking tops based on combining an active-mode annual energy consumption (“AEC”) value and a combined low-power mode annual energy consumption (“ $E_{TLP}$ ”) value associated with specific design options, noting that different combinations of AEC and  $E_{TLP}$  could be used to meet the IAEC of a given efficiency level. 88 FR 6818, 6845–6846. DOE received additional electric smooth element cooking top test data from AHAM and PG&E in response to the February 2023 SNOPR. These additional data are consistent with DOE’s tentative determination in the February 2023 SNOPR regarding efficiency levels for these products. Therefore, in this NODA, DOE maintains the efficiency levels for electric smooth element cooking tops that were

proposed in the February 2023 SNOPR. Table II.1 shows the efficiency levels for electric smooth element cooking tops.

**Table II.1 Electric Smooth Element Cooking Top Efficiency Levels**

Level	IAEC ( <i>kWh/year</i> )
Baseline	250
1	207
2	189
3	179

DOE is publishing the full expanded test sample for electric smooth cooking tops (including the stakeholder-provided data and one additional DOE unit) in an attachment to this NODA, available in the docket for this rulemaking.<sup>4</sup>

DOE requests comment on the efficiency levels for electric smooth element cooking tops.

## 2. Gas Cooking Tops

In the February 2023 SNOPR, DOE proposed new and amended energy conservation standards for consumer conventional cooking products. Per its authority in 42 U.S.C. 6295(h)(2), DOE proposed to remove the existing prescriptive standard for gas cooking tops prohibiting a constant burning pilot light. 88 FR 6818, 6819. Instead, for gas cooking tops, DOE proposed a performance standard of a maximum allowable IAEC of 1,204 kBtu/year. 88 FR 6818, 6819–6820. These proposed standards for conventional cooking tops, if adopted, would apply to all gas cooking tops manufactured in, or imported into, the United States starting on the date 3 years after the publication of any final rule for this rulemaking. 88 FR 6818, 6819.

For the February 2023 SNOPR, DOE considered efficiency levels (“ELs”) associated with an optimized burner and grate design, but only insofar as the efficiency

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<sup>4</sup> [www.regulations.gov/docket/EERE-2014-BT-STD-0005/document](https://www.regulations.gov/docket/EERE-2014-BT-STD-0005/document).

level was achievable with continuous cast-iron grates and at least one high input rate (“HIR”) burner (which DOE defined in the February 2023 SNOPR as burners with input rates greater than or equal to 14,000 British thermal units per hour (“Btu/h”)). 88 FR 6818, 6845. DOE’s testing showed that energy use was correlated to burner design and cooking top configuration (*e.g.*, grate weight, flame angle, distance from burner ports to the cooking surface) and could be reduced by optimizing the design of the burner and grate system. *Id.* DOE reviewed the test data for the gas cooking tops in its test sample and identified two efficiency levels associated with improving the burner and grate design that corresponded to different design criteria. *Id.*

In the February 2023 SNOPR, DOE established efficiency levels for gas cooking tops based on combining an AEC value and an  $E_{TLP}$  value associated with specific design options, noting that different combinations of AEC and  $E_{TLP}$  could be used to meet the IAEC of a given efficiency level. 88 FR 6818, 6845–6846.

In the February 2023 SNOPR, DOE set the baseline gas cooking top IAEC equal to the sum of the maximum AEC and the maximum  $E_{TLP}$  observed in its test sample for gas cooking tops. 88 FR 6818, 6844.

In the February 2023 SNOPR, DOE defined EL 1 based on an AEC achievable by a gas cooking top with four or more HIR burners and continuous cast-iron grates and the same  $E_{TLP}$  as used for the baseline efficiency level. 88 FR 6818, 6845–6846. The AEC selected for EL 1 was the highest measured among the units in its test sample with four or more HIR burners and continuous cast-iron grates, as shown in Table 5.5.2 in chapter 5 of the TSD for the February 2023 SNOPR.<sup>5</sup>

In the February 2023 SNOPR, DOE defined EL 2 based on the highest measured AEC measured among the units in its test sample with at least one HIR burner and continuous cast-iron grates and the same  $E_{TLP}$  as used for the baseline efficiency level. 88

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<sup>5</sup> Available at [www.regulations.gov/document/EERE-2014-BT-STD-0005-0090](http://www.regulations.gov/document/EERE-2014-BT-STD-0005-0090).



FR 6818, 6845-6846. In the February 2023 SNOPR, DOE stated that HIR burners provide unique consumer utility and allow consumers to perform high heat cooking activities such as searing and stir-frying. *Id.* at 88 FR 6845. DOE also stated that it is aware that some consumers derive utility from continuous cast-iron grates, such as the ability to use heavy pans, or to shift cookware between burners without needing to lift them. *Id.* DOE notes that EL 2 was defined based on the highest measured efficiency unit that met the screening analysis criteria (*i.e.*, gas cooking tops that include at least one HIR burner and continuous cast-iron grates), rather than the highest measured efficiency unit of all tested units, so that all ELs would be achievable with continuous cast-iron grates and at least one HIR burner.

Table II.2 shows the efficiency levels for gas cooking tops evaluated in the February 2023 SNOPR. *Id.* at 88 FR 6846.

**Table II.2 February 2023 SNOPR Gas Cooking Top Efficiency Levels**

Level	IAEC ( <i>kBtu/year</i> )
Baseline	1,775
1	1,440
2	1,204

As discussed in section I of this document, DOE received additional gas cooking top test data from AHAM and PG&E that has prompted DOE to review the engineering analysis for gas cooking tops as presented in the February 2023 SNOPR. The additional gas cooking top test data provided to DOE includes a unit with a more energy consumptive AEC value and a different unit with a more energy consumptive maximum  $E_{TLP}$  value than the most energy consumptive values in DOE's gas cooking top test sample. As discussed, in the February 2023 SNOPR, DOE established efficiency levels for gas cooking tops based on combining the AEC value associated with specific cooking top characteristics and the maximum  $E_{TLP}$  value in DOE's test sample, to avoid any

potential loss of utility from setting a standard based on a unit without clock functionality.

DOE is publishing the full expanded test sample for gas cooking tops (including the stakeholder-provided data) in an attachment to this NODA, available in the docket for this rulemaking.<sup>6</sup>

As discussed, in the February 2023 SNOPR, DOE used the maximum  $E_{TLP}$  value in its test sample to define the ELs for gas cooking tops. In this NODA, DOE is updating the  $E_{TLP}$  estimate at each EL for gas cooking tops to be equal to the average of the non-zero  $E_{TLP}$  values measured in the expanded test sample.  $E_{TLP}$  ranged from 6–57 kBtu/year, with one additional outlier at 101 kBtu/year. Upon closer examination of the data, DOE has tentatively determined that the  $E_{TLP}$  value used in the SNOPR was unrepresentative for use in defining the ELs. Instead, DOE has tentatively determined that a more representative  $E_{TLP}$  value to use in determining each efficiency level would be the average of the non-zero  $E_{TLP}$  values in the test sample. Through a close examination of the control functionality associated with various standby levels, DOE has tentatively determined that using the non-zero average  $E_{TLP}$  value would not preclude gas standalone cooking tops or gas ranges with electronic controls and/or displays from achieving any potential standard level.

In response to the February 2023 SNOPR and February 2023 NODA, stakeholders provided substantive information regarding gas cooking top features that are desired by consumers. A review of these stakeholder comments has led DOE to better understand what features some consumers value, including: the presence of multiple HIR burners; continuous cast-iron grates; the ability to choose between nominal unit widths; burner type (open versus sealed burners); at least one low input rate burner (*i.e.*, rated

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<sup>6</sup> [www.regulations.gov/docket/EERE-2014-BT-STD-0005/document](https://www.regulations.gov/docket/EERE-2014-BT-STD-0005/document).

below 5,000 Btu/h); the ability to have multiple dual-stacked and/or multi-ring HIR burners; and at least one extra-high input rate burner (*i.e.*, rated above 18,000 Btu/h)

In this NODA, therefore, DOE is updating its definition of the max-tech efficiency level to be based on the most efficient AEC value in its expanded test sample achievable with continuous cast-iron grates and multiple HIR burners, rather than the single HIR burner utility defined in the February 2023 SNOPR. DOE's data show that among the gas cooking tops in the expanded test sample, units with two to six HIR burners can also achieve this EL and that the updated EL 2 can be achieved by a gas cooking top with all HIR burners.

As discussed, in the February 2023 SNOPR, DOE defined EL 1 based on the optimized burner/grate design option yielding the most energy efficient AEC achievable with at least four HIR burners and continuous cast-iron grates. In this NODA, DOE is updating its definition of EL 1 to represent the most energy efficient AEC among units with multiple (up to six) HIR burners and continuous cast-iron grates that would not preclude any combination of the other features mentioned by manufacturers (including different nominal unit widths, at least one low input rate burner, all HIR burners, multiple dual-stacked and/or multi-ring HIR burners, and at least one extra-high input rate burner), as demonstrated by products from multiple manufacturers in DOE's expanded test sample.

As discussed, in the February 2023 SNOPR, DOE tentatively determined the baseline cooking top AEC as the maximum value observed in its test sample. In this NODA, DOE is updating the baseline efficiency level for gas cooking tops by applying the same methodology as was used in the engineering analysis for the February 2023 SNOPR to the expanded test sample. Using the expanded test sample, DOE is setting a higher baseline IAEC value, corresponding to a lower efficiency.

Table II.3 shows the efficiency levels for gas cooking tops that DOE evaluated for this NODA.

**Table II.3 Updated Gas Cooking Top Efficiency Levels**

Level	IAEC ( <i>kBtu/year</i> )
Baseline	1,900
1	1,633
2	1,343

DOE requests comment on the efficiency levels for gas cooking tops.

### 3. Conventional Ovens

As discussed in the February 2023 SNOPR, there are no current test procedures for conventional ovens. 88 FR 6818, 6846. Therefore, DOE considered only efficiency levels corresponding to prescriptive design requirements as defined by the design options developed as part of the screening analysis: forced convection, the use of a switch-mode power supply (“SMPS”), and an oven separator. *Id.* DOE ordered the design options by incremental manufacturer production cost (“MPC”). *Id.* In this NODA, DOE maintains the efficiency levels for conventional ovens that were proposed in the February 2023 SNOPR. Table II.4 and Table II.5 define the efficiency levels for conventional electric and gas ovens, respectively.

**Table II.4 Conventional Electric Oven Efficiency Levels**

Level	Design Option
Baseline	Baseline
1	Baseline + SMPS
2	1 + Forced Convection
3	2 + Oven Separator

**Table II.5 Conventional Gas Oven Efficiency Levels**

Level	Design Option
Baseline	Baseline
1	Baseline + SMPS
2	1 + Forced Convection

DOE requests comment on the efficiency levels for conventional ovens.

### *B. Manufacturer Production Costs*

#### 1. Electric Cooking Tops

For the February 2023 SNOPR, DOE developed cost-efficiency results for electric smooth element cooking tops based on manufacturing cost modeling of units in its sample featuring the design options. 88 FR 6818, 6850. In this NODA, DOE maintains the incremental MPCs for electric smooth element cooking tops that were proposed in the February 2023 SNOPR, as shown in Table II.6.

**Table II.6 Electric Smooth Element Cooking Tops Incremental Manufacturer Production Costs**

Level	IAEC ( <i>kWh/year</i> )	Incremental MPC ( <i>2021\$</i> )
1	207	\$2.17
2	189	\$11.05
3	179	\$263.19

DOE is requesting comment, data, and information on the incremental manufacturer production costs for electric smooth element cooking tops.

#### 2. Gas Cooking Tops

For the February 2023 SNOPR, DOE developed the incremental MPCs associated with each efficiency levels shown in Table II.7. 88 FR 6818, 6850–6851. DOE developed

incremental MPCs based on manufacturing cost modeling of units in its sample featuring the design options. *Id.*

As discussed, in the February 2023 SNOPR, DOE evaluated two versions of the optimized burner and grate design option, representative of a minimum of either four or one HIR burners. *Id.* DOE's testing showed that decreased energy use could be correlated to burner design and cooking top configuration (*e.g.*, grate weight, flame angle, distance from burner ports to the cooking surface). *Id.* Because this design option effectively corresponds to a whole burner and grate system redesign, regardless of the efficiency level achieved by the redesign, DOE stated that the incremental costs for EL 1 and for EL 2 for gas cooking tops include the cost for redesigning the combination of each burner and grate configuration. *Id.* Therefore, DOE stated that it was not able to determine different incremental costs for EL 1 and EL 2 for gas cooking tops. *Id.*

**Table II.7 February 2023 SNOPR Gas Cooking Tops Incremental Manufacturer Production Costs**

Level	IAEC ( <i>kBtu/year</i> )	Incremental MPC ( <i>2021\$</i> )
1	1,440	\$12.41
2	1,204	\$12.41

In this NODA, DOE is updating the MPCs for gas cooking tops based on its understanding of the different types of burner and grate redesign likely to be needed to achieve each of the revised ELs, using the same underlying data as was used in the February 2023 SNOPR.

DOE's analysis shows that the incremental MPC developed in the February 2023 SNOPR, \$12.41, representing the optimized burner and grate design option (*e.g.*, grate weight, flame angle, distance from burner ports to the cooking surface), accurately represents the cost to redesign a unit at EL 1 to meet EL 2.

To develop the incremental MPC between the updated baseline and EL 1, DOE analyzed the test data in its expanded test sample which shows that cooking tops at the baseline efficiency level typically include one or two burners with “non-optimized” turndown capability (*i.e.*, the lowest available simmer setting is more energy consumptive than necessary to hold the test load in a constant simmer close to 90 degrees Celsius, resulting in significantly higher energy consumption than for a burner with a simmer setting that holds the test load close to that temperature). In this NODA, DOE estimates that the cost of implementing a burner with optimized turndown capability in place of a burner with non-optimized turndown capability to meet typical efficiencies available in the market is smaller than the cost of an entirely redesigned burner and grate system (associated with the incremental MPC between EL 1 and EL 2). DOE estimates that the percentage of burners with non-optimized turndown capability (defined empirically from the expanded test sample as burners with a specific energy use of more than 1.45 Btu per gram of water in the test load, as measured by appendix I1) in the baseline units in its expanded test sample ranged from 16 percent (one out of six burners) to 40 percent (two out of five burners). In order to conservatively assess the incremental MPC between baseline and EL 1, DOE defined it as 40 percent of the \$12.41 incremental MPC between EL 1 and EL 2, or \$4.96.

In sum, for this NODA, DOE developed the incremental MPCs relative to the baseline associated with the updated efficiency levels shown in Table II.8.

**Table II.8 Updated Gas Cooking Tops Incremental Manufacturer Production Costs**

Level	IAEC (kBtu/year)	Incremental MPC (2021\$)
1	1,633	\$4.96
2	1,343	\$17.37

DOE is requesting comment, data, and information on the incremental manufacturer production costs for gas cooking tops.

### 3. Conventional Ovens

For the February 2023 SNOPR, DOE developed cost-efficiency results for each conventional oven product class based on manufacturing cost modeling of units in its sample featuring the design options. 88 FR 6818, 6851. In this NODA, DOE maintains the incremental MPCs for conventional ovens that were presented in the February 2023 SNOPR, as shown in Table II.9 and Table II.10 for electric and gas ovens respectively.

**Table II.9 Electric Oven Incremental Manufacturer Production Costs**

Level	Design Option	Incremental MPC (2021\$)
1	Baseline + SMPS	\$2.03
2	1 + Forced Convection	\$34.11
3	2 + Oven Separator	\$67.77

**Table II.10 Gas Oven Incremental Manufacturer Production Costs**

Level	Design Option	Incremental MPC (2021\$)
1	Baseline + SMPS	\$2.17
2	1 + Forced Convection	\$24.96

DOE is requesting comment, data, and information on the incremental manufacturer production costs for conventional ovens.

### *C. Market Distribution*

#### 1. Electric Cooking Tops

In the February 2023 SNOPR, DOE estimated the efficiency distribution for each cooking top product class from the sample of cooking tops used to develop the engineering analysis. 88 FR 6818, 6856. Given the lack of data on historic efficiency



trends, DOE assumed that the estimated current distributions would apply in 2027. *Id.*

The estimated market shares for the no-new-standards case for electric smooth element cooking tops in 2027 used in the February 2023 SNOPR are shown in Table II.11. 88 FR 6818, 6857.

**Table II.11 February 2023 SNOPR No-New-Standards Case Market Share for Electric Smooth Element Cooking Tops by Efficiency Level in 2027**

EL	IAEC ( <i>kWh/year</i> )	Market Share
0	250	20%
1	207	50%
2	189	25%
3	179	5%

In its comment on the February 2023 SNOPR, AHAM provided shipment estimates of electric cooking tops by product type (*i.e.*, open (coil) element versus electric smooth resistance versus induction).<sup>7</sup> The AHAM shipment data specified that of electric smooth element cooking top shipments, 93.8 percent use resistance heating elements, and 6.2 percent use induction heating elements. AHAM also provided shipment estimates of electric cooking tops by configuration (*i.e.*, standalone cooking top versus conventional range). The AHAM shipment data specified that 93.4 percent of electric cooking tops are sold as components of conventional ranges.

Combining these percentages, DOE estimates the current market distributions for electric smooth element cooking tops by product categories as shown in Table II.12 .

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<sup>7</sup> Available at [www.regulations.gov/document/EERE-2014-BT-STD-0005-2285](http://www.regulations.gov/document/EERE-2014-BT-STD-0005-2285).

**Table II.12 Electric Smooth Element Cooking Top Distributions by Product Category**

	<b>Radiant (93.8%)</b>	<b>Induction (6.2%)</b>
<b>Standalone cooking top (6.6%)</b>	6.2%	0.4%
<b>Component of a conventional range (93.4%)</b>	87.6%	5.8%

To calculate the no-new-standards case market shares, DOE first determined the efficiency level and category of each unit in its expanded test sample, then applied the appropriate weighting factors to adjust the efficiency level distribution of the test sample to a market share distribution representing the full market.

Table II.13 shows the results for the NODA estimate of the no-new-standards case efficiency distribution in 2027 for electric smooth element cooking tops.

**Table II.13 Updated No-New-Standards Case Market Share for Electric Smooth Element Cooking Tops by Efficiency Level in 2027**

<b>EL</b>	<b>IAEC (kWh/year)</b>	<b>Market Share</b>
0	250	23%
1	207	62%
2	189	15%
3	179	0.02%

DOE requests comment on the no-new-standards case market share for electric smooth element cooking tops.

## 2. Gas Cooking Tops

In the February 2023 SNOPR analysis, DOE's estimate of the current market share of gas cooking tops that meet each efficiency level under consideration reflected the exclusion of higher-efficiency products that DOE had screened out (*i.e.*, excluded products that do not have at least one HIR burner and continuous cast-iron grates). (See Table 8.2.43 in chapter 8 of the TSD for the February 2023 SNOPR). In the February 2023 NODA, DOE clarified that it has tentatively determined that gas cooking tops with

steel grates, non-continuous grates, and/or burners with input rates less than 14,000 Btu/h would also be able to meet the efficiency levels described in the February 2023 SNOPR and therefore would not be impacted by the proposed standard, if finalized. 88 FR 12603, 12604. Based on its testing results and model counts of the burner/grate configurations of gas cooking top models currently available on the websites of major U.S. retailers, DOE estimated in the February 2023 NODA that the products that were screened out of the engineering analysis for the February 2023 SNOPR represent over 40 percent of the market. 88 FR 12603, 12605. Together with the models included in the engineering analysis, DOE estimated that nearly half of the total gas cooking top market currently achieves the proposed EL 2 and therefore would not be impacted by the proposed standard, if finalized. *Id.* DOE estimated that the remaining portion of the total market was distributed equally between the baseline and EL 1. *Id.*

In its comment on the February 2023 SNOPR, AHAM provided shipment estimates of gas cooking tops by configuration (*i.e.*, standalone cooking top versus conventional range).<sup>8</sup> According to AHAM’s shipment data, 86.7 percent of gas cooking tops are sold as components of conventional ranges.

For this NODA, DOE confirmed the estimate of the products that were screened out of the February 2023 SNOPR engineering analysis based on a thorough, model-by-model evaluation of these specific features on online retailer websites. DOE notes that these models represent “entry-level” products that feature steel grates, non-continuous grates, and/or burners with input rates less than 14,000 Btu/h. DOE notes that these are typically the lowest-cost products available in the market, and are typically purchased by price-sensitive consumers.

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<sup>8</sup> Available at [www.regulations.gov/document/EERE-2014-BT-STD-0005-2285](http://www.regulations.gov/document/EERE-2014-BT-STD-0005-2285).

Combining these percentages, DOE estimates the current market distributions for gas cooking tops by product categories as shown in Table II.14.

**Table II.14 Gas Cooking Top Market Distributions by Product Category**

	<b>Entry-Level (40%)</b>	<b>Non-Entry-Level (60%)</b>
<b>Standalone cooking top (13.3%)</b>	5.3%	8.0%
<b>Component of a conventional range (86.7%)</b>	34.7%	52.0%

To calculate the no-new-standards case market shares, DOE first determined the efficiency level and category of each unit in its expanded test sample, then applied the appropriate weighting factors to adjust the efficiency level distribution of the test sample to a market share distribution representing the full market.

Table II.15 shows the results for the NODA estimate of the no-new-standards case efficiency distribution in 2027 for gas cooking tops shipments.

**Table II.15 Updated No-New-Standards Case Market Share for Gas Cooking Top Shipments by Efficiency Level in 2027**

<b>EL</b>	<b>IAEC (kBtu/year)</b>	<b>Market Share</b>
0	1,900	10%
1	1,633	49%
2	1,343	41%

DOE requests comment on the no-new-standards case market share for gas cooking tops.

### 3. Conventional Ovens

In the February 2023 SNOPR, DOE relied on model counts of the current market distribution for ovens. 88 FR 6818, 6856. Given the lack of data on historic efficiency trends, DOE assumed that the estimated current distributions would apply in 2027. *Id.*

The estimated market shares for the no-new-standards case for gas and electric ovens in 2027 are shown in Table II.16 and Table II.17, respectively. 88 FR 6818, 6857. DOE maintains the February 2023 SNO PR market share estimates for this NODA.

**Table II.16 No-New-Standards Case Market Share for Gas Ovens by Efficiency Level in 2027**

EL	Gas Standard Ovens, Freestanding	Gas Standard Ovens, Built-In/Slide-In	Gas Self-Clean Ovens, Freestanding	Gas Self-Clean Ovens, Built-In/Slide-In
0	4%	4%	4%	4%
1	34%	58%	3%	19%
2	62%	38%	93%	77%

**Table II.17 No-New-Standards Case Market Share for Electric Ovens by Efficiency Level in 2027**

EL	Electric Standard Ovens, Freestanding	Electric Standard Ovens, Built-In/Slide-In	Electric Self-Clean Ovens, Freestanding	Electric Self-Clean Ovens, Built-In/Slide-In
0	5%	5%	5%	5%
1	57%	65%	18%	7%
2	38%	30%	77%	86%
3	0%	0%	0%	2%

DOE requests comment on the no-new-standards case market share for conventional ovens.

#### *D. Life-Cycle Cost and Payback Period Analysis*

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual consumers of potential energy conservation standards for the gas cooking top efficiency levels presented in this NODA. For this NODA analysis, DOE used the same inputs and assumptions as in the February 2023 SNO PR LCC analysis, including using the 2015 Residential Energy Consumption Survey (“2015 RECS”)<sup>9</sup> as the basis for the

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<sup>9</sup> Available at [www.eia.gov/consumption/residential/data/2015/](http://www.eia.gov/consumption/residential/data/2015/).

consumer sample and Energy Information Administration’s (“EIA’s”) Annual Energy Outlook 2022 (“AEO 2022”)<sup>10</sup> for energy price projections. Details of the analysis inputs and methodology are available in chapter 8 of the TSD for the February 2023 SNOPR analysis.<sup>11</sup> Subsequent rulemaking analyses will be updated with the most recent data releases (*e.g.*, 2020 RECS, AEO 2023).

The results of this NODA analysis are presented in Table II.18 through Table II.37. In the first of each pair of tables, the simple payback is measured relative to the baseline product. In the second table, impacts are measured relative to the efficiency distribution in the no-new-standards case in the compliance year (see section II.C of this document). Because some consumers purchase products with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of the baseline product and the average LCC at each EL. The savings refer only to consumers who are affected by a standard at a given EL.<sup>12</sup> Those who already purchase a product with efficiency at or above a given EL are not affected. Consumers for whom the LCC increases at a given EL experience a net cost.

**Table II.18 Average LCC and PBP Results for Electric Smooth Element Cooking Tops**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year’s Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$552	\$20	\$405	\$957	--	16.8
1	\$555	\$14	\$332	\$887	0.6	16.8
2	\$568	\$13	\$319	\$887	2.5	16.8
3	\$1,204	\$12	\$311	\$1,515	87.7	16.8

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

<sup>10</sup> Available at [www.eia.gov/outlooks/aeo/index.php](http://www.eia.gov/outlooks/aeo/index.php).

<sup>11</sup> Available at [www.regulations.gov/document/EERE-2014-BT-STD-0005-0090](http://www.regulations.gov/document/EERE-2014-BT-STD-0005-0090).

<sup>12</sup> LCC savings presented in the February 2023 SNOPR were mislabeled as only including impacted consumers; however, they also included unimpacted consumers. The values in this NODA have been updated to reflect only impacted consumers to be consistent with current DOE rulemakings.

**Table II.19 Average LCC Savings Relative to the No-New Standards Case for Electric Smooth Element Cooking Tops**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$68.87	0%
2	\$19.07	40%
3	(\$611.59)	100%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.20 Average LCC and PBP Results for Gas Cooking Tops**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$376	\$16	\$342	\$719	--	14.5
1	\$384	\$14	\$322	\$705	4.3	14.5
2	\$402	\$12	\$299	\$701	7.2	14.5

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.21 Average LCC Savings Relative to the No-New Standards Case for Gas Cooking Tops**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings* 2021\$	Percent of Consumers that Experience Net Cost
1	\$14.78	4%
2	\$6.86	35%

\* The savings represent the average LCC for affected consumers.

**Table II.22 Average LCC and PBP Results for Electric Standard Ovens, Freestanding**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$652	\$23	\$480	\$1,133	--	16.8
1	\$655	\$21	\$457	\$1,113	1.7	16.8
2	\$704	\$20	\$447	\$1,151	19.8	16.8
3	\$755	\$17	\$403	\$1,159	17.2	16.8

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.23 Average LCC Savings Relative to the No-New Standards Case for Electric Standard Ovens, Freestanding**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$19.82	0%
2	(\$36.62)	60%
3	(\$30.65)	80%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.24 Average LCC and PBP Results for Electric Standard Ovens, Built-in/Slide-in**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$682	\$23	\$492	\$1,175	--	16.8
1	\$685	\$22	\$470	\$1,155	1.8	16.8
2	\$734	\$21	\$459	\$1,194	20.2	16.8
3	\$785	\$18	\$416	\$1,202	17.3	16.8

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.25 Average LCC Savings Relative to the No-New Standards Case for Electric Standard Ovens, Built-In/Slide-In**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$19.86	0%
2	(\$36.66)	67%
3	(\$33.53)	81%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.



**Table II.26 Average LCC and PBP Results for Electric Self-Clean Ovens, Freestanding**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$699	\$28	\$550	\$1,250	--	16.8
1	\$702	\$26	\$527	\$1,229	1.7	16.8
2	\$751	\$25	\$517	\$1,268	19.8	16.8
3	\$802	\$22	\$473	\$1,276	17.2	16.8

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.27 Average LCC Savings Relative to the No-New Standards Case for Electric Self-Clean Ovens, Freestanding**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$20.55	0%
2	(\$33.71)	22%
3	(\$15.70)	75%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.28 Average LCC and PBP Results for Electric Self-Clean Ovens, Built-In/Slide-In**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$729	\$29	\$561	\$1,291	--	16.8
1	\$732	\$27	\$539	\$1,271	1.8	16.8
2	\$781	\$26	\$528	\$1,310	20.2	16.8
3	\$832	\$23	\$485	\$1,318	17.3	16.8

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.29 Average LCC Savings Relative to the No-New Standards Case for Electric Self-Clean Ovens, Built-In/Slide-In**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$20.23	0%
2	(\$30.20)	11%
3	(\$11.88)	72%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.30 Average LCC and PBP Results for Gas Standard Ovens, Freestanding**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$677	\$42	\$682	\$1,359	--	14.5
1	\$681	\$41	\$662	\$1,343	1.9	14.5
2	\$715	\$40	\$651	\$1,366	14.3	14.5

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.31 Average LCC Savings Relative to the No-New Standards Case for Gas Standard Ovens, Freestanding**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$15.05	1%
2	(\$20.68)	34%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.32 Average LCC and PBP Results for Gas Standard Ovens, Built-In/Slide-In**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$707	\$43	\$690	\$1,397	--	14.5
1	\$710	\$41	\$671	\$1,381	2.0	14.5
2	\$744	\$40	\$660	\$1,404	14.5	14.5

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.33 Average LCC Savings Relative to the No-New Standards Case for Gas Standard Ovens, Built-In/Slide-In**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$15.73	1%
2	(\$21.74)	56%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.34 Average LCC and PBP Results for Gas Self-Clean Ovens, Freestanding**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$847	\$44	\$702	\$1,548	--	14.5
1	\$850	\$42	\$682	\$1,532	1.9	14.5
2	\$884	\$41	\$671	\$1,555	14.3	14.5

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.35 Average LCC Savings Relative to the No-New Standards Case for Gas Self-Clean Ovens, Freestanding**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$15.22	1%
2	(\$14.43)	6%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

**Table II.36 Average LCC and PBP Results for Gas Self-Clean Ovens, Built-In/Slide-In**

Efficiency Level	Average Costs 2021\$				Simple Payback years	Average Lifetime years
	Installed Cost	First Year's Operating Cost	Lifetime Operating Cost	LCC		
Baseline	\$876	\$45	\$710	\$1,586	--	14.5
1	\$879	\$43	\$691	\$1,571	2.0	14.5
2	\$913	\$42	\$680	\$1,593	14.5	14.5

Note: The results for each efficiency level are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

**Table II.37 Average LCC Savings Relative to the No-New Standards Case for Gas Self-Clean Ovens, Built-In/Slide-In**

Efficiency Level	Life-Cycle Cost Savings	
	Average LCC Savings <sup>*,**</sup> 2021\$	Percent of Consumers that Experience Net Cost
1	\$15.53	1%
2	(\$19.69)	20%

\* The savings represent the average LCC for affected consumers.

\*\*Negative values denoted in parenthesis.

The LCC spreadsheet used to calculate the results of this NODA are available on the DOE website for this rulemaking.<sup>13</sup>

DOE requests comment on the LCC results for conventional cooking products.

#### *E. National Impact Analysis*

The NIA assesses the national energy savings (“NES”) and the net present value (“NPV”) from a national perspective of total consumer costs and savings that would be expected to result from new or amended standards at specific efficiency levels. In this section, DOE presents the NIA results analyzing the impacts of the updated analysis discussed in this NODA. As in the LCC analysis, DOE maintained the same methodologies and assumptions presented in the February 2023 SNOPR analysis, including using estimates from 2015 RECS and AEO 2022 projections. Details of the NIA analysis are available in chapter 10 of the TSD for the February 2023 SNOPR. Subsequent rulemaking analyses will be updated with most recent data releases (*e.g.*, 2020 RECS, AEO 2023).

Table II.38 shows full-fuel cycle NES results of a potential standard at each efficiency level. Full-fuel cycle national energy savings are presented in quadrillion British thermal units, or quads. Table II.39 and Table II.40 show NPV results at each considered efficiency level, discounted at 3 and 7 percent, respectively.

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<sup>13</sup> [www.regulations.gov/docket/EERE-2014-BT-STD-0005/document](http://www.regulations.gov/docket/EERE-2014-BT-STD-0005/document).

**Table II.38 Cumulative Full-Fuel Cycle National Energy Savings; 30 Years of Shipments (2027-2056)**

Efficiency Level	Electric Smooth Cooking Tops	Gas Cooking Tops	Electric Ovens	Gas Ovens
	<i>quads</i>			
1	0.14	0.02	0.02	0.01
2	0.23	0.16	0.08	0.03
3	0.25		0.90	

**Table II.39 Cumulative Net Present Value of Consumer Benefits at a 3 Percent Discount Rate; 30 Years of Shipments (2027-2056)**

Efficiency Level	Electric Smooth Cooking Tops	Gas Cooking Tops	Electric Ovens	Gas Ovens
	<i>billion 2021\$</i>			
1	0.89	0.05	0.13	0.04
2*	1.01	(0.02)	(1.05)	(0.25)
3*	(28.61)		(1.06)	

\*Negative values denoted in parenthesis.

**Table II.40 Cumulative Net Present Value of Consumer Benefits at a 7 Percent Discount Rate; 30 Years of Shipments (2027-2056)**

Efficiency Level	Electric Smooth Cooking Tops	Gas Cooking Tops	Electric Ovens	Gas Ovens
	<i>billion 2021\$</i>			
1	0.36	0.01	0.05	0.02
2*	0.35	(0.09)	(0.63)	(0.15)
3*	(15.17)		(1.34)	

\*Negative values denoted in parenthesis.

The NIA spreadsheet used to calculate the results of this NODA are available on the DOE website for this rulemaking.<sup>14</sup>

DOE requests comment on the NIA results for conventional cooking products.

<sup>14</sup> [www.regulations.gov/docket/EERE-2014-BT-STD-0005/document](http://www.regulations.gov/docket/EERE-2014-BT-STD-0005/document).

### III. Public Participation

DOE requests comment on the updated efficiency levels, incremental MPCs, no-new-standards case market shares, LCC, PBP, and NIA results for consumer conventional cooking products presented in this NODA. As noted in the February 2023 SNOPR, DOE may adopt energy efficiency levels that are either higher or lower than the proposed standards, or some combination of level(s) that incorporate the proposed standards in part.

DOE will accept comments, data, and information regarding this document, but no later than the date provided in the **DATES** section at the beginning of this document. Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this document.

*Submitting comments via [www.regulations.gov](http://www.regulations.gov).* The [www.regulations.gov](http://www.regulations.gov) webpage will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

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Include contact information each time you submit comments, data, documents, and other information to DOE. No telefacsimiles (“faxes”) will be accepted.

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It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

### **Signing Authority**

This document of the Department of Energy was signed on July 27, 2023, by Francisco Alejandro Moreno, Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.



Signed in Washington, DC, on July 28, 2023.

**Treena V. Garrett,**

*Federal Register Liaison Officer,*

*U.S. Department of Energy.*

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